

WHAT IS CLAIMED IS:

1. A vapor-compression refrigerant cycle system comprising:

a compressor for sucking and compressing refrigerant;

a radiator that cools high-pressure refrigerant discharged from the compressor;

a first evaporator in which refrigerant after being decompressed is evaporated;

a second evaporator in which refrigerant is evaporated at a pressure lower than that in the first evaporator; and

a switching device for switching between a first circulation where the refrigerant after being decompressed is circulated to the first evaporator and a second circulation where the refrigerant is circulated to the second evaporator, wherein:

when the switching device switches to the second circulation from the first circulation, a refrigerant circulation into the second evaporator is stopped until the refrigerant pressure in the second evaporator becomes equal to or lower than a predetermined pressure.

2. The vapor-compression refrigerant cycle system according to claim 1, wherein carbon dioxide is used as the refrigerant.

3. The vapor-compression refrigerant cycle system according to claim 1, further comprising

a first decompression unit for decompressing refrigerant to be introduced from the radiator to the first evaporator in the first circulation; and

a second decompression unit for decompressing refrigerant to be introduced from the radiator to the second evaporator in the second circulation, wherein:

when the switching device switches to the second circulation from the first circulation, the second decompression unit is fully closed to stop the refrigerant circulation into the second evaporator until the refrigerant pressure in the second evaporator becomes equal to or lower than the predetermined pressure; and

when the refrigerant pressure in the second evaporator becomes equal to or lower than the predetermined pressure after the switching device switches to the second circulation from the first circulation, the second decompression device is opened to have a predetermined throttle degree.

4. The vapor-compression refrigerant cycle system according to claim 1, further comprising

an ejector pump that includes a nozzle for decompressing the refrigerant from the radiator,

wherein the ejector pump is disposed to circulate refrigerant into at least one of the first evaporator and the second evaporator by an entrainment function of a high-speed refrigerant flow jetted from the nozzle.

5. The vapor-compression refrigerant cycle system according to claim 4, wherein the first evaporator and the second evaporator are connected to the ejector pump in parallel, in a refrigerant flow sucked into the ejector pump.

6. The vapor-compression refrigerant cycle system according to claim 4, wherein the ejector pump is disposed to circulate refrigerant into the first evaporator, the system further comprising

a decompression unit, disposed in a refrigerant passage through which refrigerant from the radiator is introduced into the second evaporator while bypassing the ejector pump, for decompressing refrigerant flowing into the second evaporator.

7. The vapor-compression refrigerant cycle system according to claim 4, wherein the ejector pump is disposed to circulate refrigerant into the first evaporator, the system further comprising

an another ejector pump having a nozzle for decompressing refrigerant flowing out of the radiator,

the another ejector pump is disposed to circulate refrigerant into the second evaporator by an entrainment function of a high-speed refrigerant flow jetted from the nozzle of the another ejector pump.

8. The vapor-compression refrigerant cycle system according to claim 4, further comprising

a gas-liquid separator for separating refrigerant discharged from the ejector pump into gas refrigerant and liquid refrigerant, the gas-liquid separator including a gas refrigerant outlet coupled to a refrigerant suction side of the compressor and a liquid refrigerant outlet coupled to at least one of a refrigerant inlet of the first evaporator and a refrigerant inlet of the second evaporator.

9. The vapor-compression refrigerant cycle system according to claim 1, further comprising

an inner heat exchanger disposed to perform a heat exchange between refrigerant flowing out of the radiator and refrigerant to be sucked into the compressor.

10. A vapor-compression refrigerant cycle system comprising

a compressor for sucking and compressing refrigerant;

a radiator that cools high-pressure refrigerant discharged from the compressor;

a first evaporator in which refrigerant after being decompressed is evaporated;

a second evaporator in which refrigerant is evaporated at a pressure lower than that in the first evaporator;

a switching device for switching between a first circulation where the refrigerant after being decompressed is circulated to the first evaporator and a second circulation where the refrigerant is circulated to the second evaporator;

and

an ejector pump that includes a nozzle for decompressing the refrigerant from the radiator,

wherein the ejector pump is disposed to circulate refrigerant into at least one of the first evaporator and the second evaporator by an entrainment function of a high-speed refrigerant flow jetted from the nozzle.

11. The vapor-compression refrigerant cycle system according to claim 10, wherein carbon dioxide is used as the refrigerant.

12. The vapor-compression refrigerant cycle system according to claim 10, wherein the first evaporator and the second evaporator are connected to the ejector pump in parallel, in a refrigerant flow sucked into the ejector pump.

13. The vapor-compression refrigerant cycle system according to claim 10, wherein the ejector pump is disposed to circulate refrigerant into the first evaporator, the system further comprising

a decompression unit, disposed in a refrigerant passage through which refrigerant from the radiator is introduced into the second evaporator while bypassing the ejector pump, for decompressing refrigerant flowing into the second evaporator.

14. The vapor-compression refrigerant cycle system

according to claim 10, wherein the ejector pump is disposed to circulate refrigerant into the first evaporator, the system further comprising

an another ejector pump having a nozzle for decompressing refrigerant flowing out of the radiator,

the another ejector pump is disposed to circulate refrigerant into the second evaporator by an entrainment function of a high-speed refrigerant flow jetted from the nozzle of the another ejector pump.

15. The vapor-compression refrigerant cycle system according to claim 10, further comprising

a gas-liquid separator for separating refrigerant discharged from the ejector pump into gas refrigerant and liquid refrigerant, the gas-liquid separator including a gas refrigerant outlet coupled to a refrigerant suction side of the compressor and a liquid refrigerant outlet coupled to at least one of a refrigerant inlet of the first evaporator and a refrigerant inlet of the second evaporator.

16. The vapor-compression refrigerant cycle system according to claim 10, further comprising

an inner heat exchanger disposed to perform a heat exchange between refrigerant flowing out of the radiator and refrigerant to be sucked into the compressor.